United States Department Of Agriculture
Forest Service
Shasta-Trinity National Forests
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Reply To: 3420 Lat 41.33926 Lon -123.54765 Date: October 9, 1990

Subject: Evaluation of Black Stain Root Disease in Brown and Roselina Plantations, Orleans Ranger District (FPM Report No. N90-12)

To: Forest Supervisor, Six Rivers National Forest

On August 22, 1990, Dave Schultz, Sheri Smith, entomologists, and I visited plantations in the Brown and Roselina units (T. 11 N., R. 5 E. and 6 E.) on the Orleans Ranger District. We were accompanied by Tom Bouse, Sue MacMeeken and Kathy McCovey from the District.

The units we examined were Douglas-fir plantations that had been planted in the past 20 years. Some of the plantations had been precommercially thinned.

A number of pockets of dead and dying Douglas-fir had been observed by District personnel. They suspected black stain root disease, caused by Leptographium wageneri var. pseudotsugae (syn. Verticicladiella wageneri), as being the cause. The type of injury, dead and dying trees, declining crowns, shortened terminal growth, and stress cone crops, are typical of this root disease in the younger age class of trees. We found the dark stain following the annual rings in the wood at the base of several trees in several plantations confirming the presence of black stain root disease. We also observed typical above ground symptoms of the disease in several of the units.

The fungus, L. wageneri, has several strains which attack a number of hosts. The strain on Douglas-fir is specific to this host and is not known to attack other tree species. The fungus occurs in the roots and lower boles of infected trees. It occupies the vascular tracheids in the sapwood, blocking water transport. Several root-inhabiting insects are vectors, primarily a bark beetle, Hylastes nigrinus, and two weevils, Pissodes fasciatus and Steremnius carinatus. These insects feed and breed in the phloem and cambium on roots of cut and declining Douglas-firs. Phloem may be suitable for attack for 2 years after tree death. It is believed that the fungus sporulates in the insect galleries and emerging adults pick up the spores on their body. The fungus is then transmitted to another site when these adults feed on or breed in new roots. Once established in a root, the fungus grows through the tracheids and can attack the roots of surrounding Douglas-firs by growing for short distances through soil. Disease centers may continue to expand until there is a break in host roots, such as by the presence of a non-susceptible species, a road, or a stream.

There is no known method of directly controlling this disease once it is established in a stand. Neither is it known what conditions actually cause the initiation of new centers. There is evidence that precommercial thinning is

If there are any questions about this report or if you would like additional assistance, please contact Dave Schultz or me at (916) 246-5101.

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